WHAT IS CLAIMED IS:

1. A network system comprising:

a network comprising:

a network bus electrically connected to at least one network device; and

a network controller for directing communications with the at least one remote device via said network bus, wherein said network controller is capable of selectively operating in one of a synchronous mode and an asynchronous mode, wherein said network controller is capable of transmitting messages and clock signals via said network bus in the synchronous mode, and wherein said network controller is capable of transmitting messages at a predetermined bit rate without any accompanying clock signals via said network bus in the asynchronous mode; and

at least one network device interface element electrically connected between said network bus and respective remote devices, wherein said at least one network device interface element is capable of transmitting and receiving messages via said network controller, each network device interface comprising:

a local oscillator capable of issuing clock signals having at least one frequency for controlling a rate at which said network device interface element transmits and receives messages; and

a spread-spectrum clock for receiving the clock signals issued by said local oscillator and for spreading energy of the clock signals over a plurality of frequencies wider than the at least one frequency of the local oscillator so as to at least partially limit electromagnetic emissions from said local oscillator.

2. A network system according to Claim 1, wherein said at least one network device interface element further includes at least one suppression assembly electrically connected between said network bus and respective network devices, wherein each suppression assembly is capable of further limiting electromagnetic emissions from the respective network device interface elements.

3. A network system according to Claim 2, wherein each network device interface element further comprises:

a transceiver for transmitting and receiving messages via said network bus; and

a processing element for providing commands to the respective remote device in response to messages received by said transceiver and for receiving data from the associated remote device, wherein said transceiver and said processing element are driven by said spread-spectrum clock.

4. A network system according to Claim 3 further comprising at least one resistor electrically connected between said transceiver and said processing element to thereby limit noise generated by said transceiver.

5. A network system according to Claim 2, wherein each suppression assembly is embodied within a respective network device interface element, wherein each suppression assembly is electrically connected between the transceiver of the respective network device interface element and said network bus, and wherein each suppression assembly is capable of at least partially limiting electromagnetic emissions from the transceiver of the respective network device interface element.

6. A network system according to Claim 2, wherein said network bus comprises unshielded differential twisted-pair wires, and wherein each suppression assembly comprises an isolation transformer.

7. A network system according to Claim 6, wherein each isolation transformer includes a primary coil located proximate a respective network device and a secondary coil located proximate said network bus, wherein the primary coil and secondary coil include a primary center tap and a secondary center tap, respectively, and wherein each suppression assembly further comprises:

a low impedance capacitor electrically connected between the primary center tap and a ground; and

a resistor electrically connected between the secondary center tap and the ground.

8. A network system according to Claim 6, wherein the at least one suppression assembly further comprises a common mode choke electrically connected between said isolation transformer and said network bus.

9. A network system according to Claim 8, wherein the at least one suppression assembly further comprises a low pass filter electrically connected between said transceiver and said isolation transformer.

10. A network system comprising:

a network comprising:

a network bus electrically connected to a plurality of remote devices; and

a network controller for digitally directing transmissions with the plurality of remote devices via said network bus; and

a plurality of network device interface elements adapted to interconnect said network controller with respective remote devices via said network bus, each network device interface element comprising:

a local oscillator capable of issuing clock signals having at least one frequency for controlling a rate at which said network device interface element transmits and receives messages; and

a spread-spectrum clock for receiving the clock signals issued by said local oscillator and for spreading energy of the clock signals over a plurality of frequencies wider than the at least one frequency of the local oscillator so as to at least partially limit electromagnetic emissions from said local oscillator,

wherein each network device interface element is capable of transmitting and receiving messages via said network bus, wherein said network device interface element is capable of determining if clock signals are provided with messages received via said network bus such that said network device interface is capable of transmitting messages in one of a synchronous mode and an asynchronous mode based upon the determination.

11. A network system according to 10, wherein each network device interface element includes a suppression assembly capable of at least partially limiting

electromagnetic emissions from at least one of the respective network device interface element and the respective remote device.

12. A network system according to Claim 11, wherein each network device interface element further includes:

a transceiver capable of transmitting and receiving messages via said network bus; and

a processing element for providing commands to the associated remote device in response to messages received by said transceiver and for receiving data from the associated remote device,

wherein said transceiver and said processing element are driven by said spread-spectrum clock, wherein said suppression assembly is electrically connected between said transceiver and said network bus, and wherein said suppression assembly is capable of at least partially limiting electromagnetic emissions from said transceiver and said processing element.

13. A network system according to Claim 11, wherein said network bus comprises unshielded differential twisted-pair wires, and wherein each suppression assembly comprises an isolation transformer.

14. A network system according to Claim 13, wherein each isolation transformer includes a primary coil located proximate a respective transceiver and a secondary coil located proximate said network bus, wherein the primary coil and secondary coil include a primary center tap and a secondary center tap, respectively, and wherein each suppression assembly further comprises:

a low impedance capacitor electrically connected between the primary center tap and a ground; and

a resistor electrically connected between the secondary center tap and the ground.

15. A network system according to Claim 14, wherein each suppression assembly comprises a common mode choke electrically connected between said isolation transformer and said network bus.

16. A network system according to Claim 15, wherein each suppression assembly further comprises a low pass filter electrically connected between said transceiver and said isolation transformer.

17. A network system according to Claim 11, wherein each remote device is capable of transmitting and receiving messages via said network bus through a respective network device interface element, and wherein each suppression assembly includes a low pass filter capable of removing at least one high frequency component from the messages transmitted and received via said network bus.

18. A network system according to Claim 10, wherein each network device interface element comprises a printed circuit board upon which said suppression assembly is mounted, said network system further comprising a plurality of shielding enclosures each defining an internal cavity, wherein each printed circuit board is contained within the internal cavity defined by a respective shielding enclosure such that the respective shielding enclosure is capable of preventing at least a portion of electromagnetic emissions from the respective printed circuit board from escaping the internal cavity.

19. A network system according to Claim 18, wherein each shielding enclosure includes at least one grounding element electrically connected between at least one edge of the respective printed circuit board and said shielding enclosure.

20. A network system according to Claim 18, wherein said printed circuit board comprises a plurality of layers, wherein the plurality of layers of the printed circuit board includes at least one signal layer and a power layer, wherein the printed circuit board defines at least one via between at least two layers to electrically connect a conductive trace on a signal layer extending from said transceiver with the power layer, and wherein each network device interface element further comprises a noise suppression assembly electrically connected to the conductive trace extending from said transceiver on the signal layer.

21. A network system according to Claim 20, wherein said noise suppression assembly comprises at least one of a ferrite chip bead connected to a capacitor and an LC low pass filter network.

22. A network system according to Claim 20, wherein the plurality of layers of the printed circuit board includes a power layer and a ground layer, said network system further comprising a damping resistor and a capacitor, wherein said damping resistor and capacitor are connected in series with one another and electrically connected between the power layer and the ground layer such that said damping resistor and capacitor can provide a lossy path for noise on the power layer.

23. A network device interface element adapted to interconnect a network controller with an associated remote device via a network bus, the network device interface element comprising:

a transceiver capable of transmitting and receiving messages via the network bus;

a processing element for providing commands to the associated remote device in response to messages received by said transceiver and for receiving data from the associated remote device, wherein said network device interface element is capable of determining if clock signals are provided with messages received by said transceiver such that the network device interface is capable of transmitting messages in one of a synchronous mode and an asynchronous mode based upon the determination;

a local oscillator capable of issuing clock signals having at least one frequency for controlling a rate at which said network device interface element transmits and receives messages; and

a spread-spectrum clock for receiving the clock signals issued by said local oscillator and for spreading energy of the clock signals over a band of frequencies, centered around or for a band spaced above or for a band spaced below the at least one frequency of the local oscillator so as to at least partially limit electromagnetic emissions from said local oscillator, wherein said spread-spectrum clock drives said transceiver and said processing element.

24. A network device interface element according to Claim 23 further comprising a suppression assembly electrically connected between said transceiver

and the network bus, said suppression assembly being capable of at least partially limiting electromagnetic emissions from said transceiver and processing element.

25. A network device interface element according to Claim 24, wherein the network bus comprises unshielded differential twisted-pair wires, and wherein said suppression assembly comprises an isolation transformer.

26. A network device interface element according to Claim 25, wherein said suppression assembly further comprises a common mode choke electrically connected to the network bus between said isolation transformer and the network bus.

27. A network device interface element according to Claim 26, wherein said suppression assembly further comprises a low pass filter electrically connected between said transceiver and said isolation transformer.

28. A network device interface element according to Claim 24, wherein said suppression assembly includes a low pass filter capable of removing at least one high frequency component of messages transmitted received and transmitted via the network bus.

29. A network device interface element according to Claim 24 further comprising:

a printed circuit board upon which said transceiver, processing element and suppression assembly are mounted; and

a shielding enclosure defining an internal cavity, wherein the printed circuit board is contained within the internal cavity defined by said shielding enclosure such that said shielding enclosure is capable of preventing at least a portion of electromagnetic emissions from said transceiver, processing element and suppression assembly from escaping the internal cavity.

30. A network device interface element according to Claim 29 further comprising at least one grounding element electrically connected between at least one edge of the printed circuit board and said shielding enclosure.

31. A network device interface element according to Claim 29, wherein said printed circuit board comprises a plurality of layers, wherein the plurality of layers of the printed circuit board includes at least one signal layer and a power layer, wherein the printed circuit board defines at least one via between at least two layers to electrically connect a conductive trace on a signal layer extending from said transceiver with the power layer, and wherein the network device interface element further comprises a ferrite chip bead electrically connected to the conductive trace extending from said transceiver on the signal layer.

32. A network device interface element adapted to interconnect a network controller with an associated remote device via a network bus, the network device interface element comprising:

a transceiver capable of transmitting and receiving messages via the network bus;

a processing element for providing commands to the associated remote device in response to messages received by said transceiver and for receiving data from the associated remote device, wherein said network device interface element is capable of determining if clock signals are provided with messages received by said transceiver such that the network device interface is capable of transmitting messages in one of a synchronous mode and an asynchronous mode based upon the determination;

a local oscillator capable of issuing clock signals having at least one frequency for controlling a rate at which said network device interface element transmits and receives messages;

a spread-spectrum clock for receiving the clock signals issued by said local oscillator and for spreading energy of the clock signals over a plurality of frequencies wider than the at least one frequency of the local oscillator so as to at least partially limit electromagnetic emissions from said local oscillator, wherein said spread-spectrum clock drives said transceiver and said processing element; and

a suppression assembly adapted to at least partially limit electromagnetic emissions from said transceiver and said processing element, said suppression assembly comprising:

an isolation transformer;

a common mode choke electrically connected to the network bus between said isolation transformer and the network bus; and

a low pass filter electrically connected between said transceiver and said isolation transformer.

33. A network device interface element according to Claim 32, wherein the network bus comprises unshielded differential twisted-pair wires.

34. A network device interface element according to Claim 32 further comprising at least one voltage regulator capable of regulating power provided to said transceiver, said processing element and said local oscillator.

35. A network device interface element according to Claim 34 further comprising a power conditioning filter electrically connected between said at least one voltage regulator and said transceiver, said processing element and said local oscillator, wherein said power conditioning filter is capable of limiting high frequency noise emitted from said at least one voltage regulators.